

## PL-02

### **The Risk, the Cost and the Protection of Steel Reinforced Concrete Structures in Marine and Severe Environments – A Review**

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The steel reinforced concrete structures have been used around the world since its invention in the 19<sup>th</sup> century. The combination of concrete's compressive strength, steel's tensile strength and the passive film of steel from alkaline environment make the steel reinforced concrete the great choice for construction material. However, chlorides can induce corrosion of the reinforcing steel in concrete. Many aged steel reinforced concrete infrastructures are in marine environment and corrosive soil which are at risk from chlorides induce corrosion.

The corrosion cost of the infrastructures in these environments is too high to take. The repair and maintenance cost are increasing every year. The deaths, injures, losses of business sales, losses of GDP and job losses can be the consequences of the infrastructure's crumbling. Therefore, the protection system shall be used to mitigate the corrosion problem. The cathodic protection, both sacrificial anode and impressed current systems, has been proven to be one of the best techniques to extend the life of the chloride contaminated infrastructures.